Maternal & Neonatal Health

Interventions for Improving Newborn Health and Survival

Program Brief

Each year, approximately eight million babies die during the final weeks of pregnancy and the first 28 days of life. Ninety-eight percent of these deaths occur in developing countries (Save the Children 2001). The majority of deaths during the newborn period result from infections, asphyxia and birth injuries, and complications of premature birth (WHO 2001). Low birthweight contributes to nearly 80 percent of newborn deaths, and low birthweight babies who survive have an increased risk of developing diseases and learning disabilities (Darmstadt, Lawn, and Costello 2003; UNICEF 2001).

Newborn health and survival through the first 28 days of life are closely linked to the health of the baby's mother before and during pregnancy, as well as during labor, childbirth, and the postpartum period. Interventions for maintaining women's health during these times are therefore as important as interventions for newborns. The MNH Program promotes a continuum of interventions—beginning with support for child spacing before pregnancy and continuing through care during the newborn period—in an effort to improve the health and survival of newborn babies.

Interventions Before and During Pregnancy

Increase Birth Interval

Birth spacing—the practice of timing the period between births—has benefits for both mothers and their babies. Increasing the birth interval can decrease the risk of fetal and neonatal death and low birthweight (CATALYST Consortium 2003).

Immunize against Tetanus

Neonatal tetanus, caused by unclean practices that expose the baby's umbilical cord to bacteria, is a significant problem in 57 developing countries (UNICEF 2001). Tetanus toxoid (TT) given as part of routine antenatal care (ANC) can provide protection for both women and newborns.

Prevent and Treat Malaria, Syphilis, and Other Infections

Infections during pregnancy increase the risk of complications such as miscarriage, premature rupture of membranes, and infections in the newborn. For example, a urinary tract infection increases the risk of preterm birth, and hookworm infection increases the risk of anemia and malnutrition, leading to decreased fetal growth. Two infections that are particularly harmful to babies are malaria and syphilis.

The malaria parasite can cause miscarriage, stillbirth, and congenital malaria. In regions where it is highly prevalent, malaria may cause up to 30 percent of low birthweight and 3 to 5 percent of newborn deaths (Save the Children 2001). The use of insecticide-treated bednets and antimalarial drugs during pregnancy can reduce the risk of malaria infection in women and related low birthweight in newborns, and protect babies against infection.

The prevalence of syphilis among pregnant women is as high as 17 percent in some parts of Africa (WHO 2001). During pregnancy, the organisms that cause syphilis can invade the baby's internal organs and/or cause malformation of the bones. Antenatal screening and treatment of pregnant women for syphilis is cost-effective, and can reduce the risk of fetal and newborn death, preterm birth, low birthweight, and congenital syphilis (WHO 2001).

MNH Program Recommendations:

Increase Birth Interval

An interval of 36 months between births is ideal for decreasing the risk of complications during pregnancy, improving fetal and neonatal outcomes, and allowing women more time to care for their other young children.

Immunize against Tetanus

Pregnant women who haven't yet completed a lifetime series of five TT injections should receive their first injection as early as possible during pregnancy and the second injection at least 4 weeks later. In addition to TT immunization, providers should ensure a clean birth and appropriate care of the umbilical cord.

Prevent and Treat Malaria, Syphilis, and Other Infections

Where malaria is prevalent, pregnant women should use insecticide-treated bednets and receive intermittent preventive treatment with an antimalarial drug. The current recommendation is to give a single dose of sulfadoxine-pyrimethamine (three tablets, each containing 500 mg of sulfadoxine and 25 mg of pyrimethamine) at each of three scheduled ANC visits after fetal movement begins (not before 4 months' gestation), with at least 1 month between doses. All women should be tested for syphilis at their first ANC visit and treated with penicillin if they test positive.

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Test for HIV and Provide Appropriate Care for HIV-Positive Women

Offering voluntary HIV testing to pregnant women has many benefits. Among them, if a woman tests positive, she can receive counseling, including information on ways to reduce the risk of mother-to-child transmission (MTCT).

Nearly 700,000 children were infected with HIV in 2003, mostly through MTCT. With prolonged breastfeeding, as many as 45 percent of babies become infected. Combining the use of antiretroviral (ARV) drugs with appropriate use of obstetric interventions and complete avoidance of breastfeeding can reduce rates of MTCT to 2 percent or less (WHO 2004). ARV prophylactic regimens for babies can also help prevent MTCT.

Detect and Treat Pregnancy Complications

Complications during pregnancy can cause newborn morbidity and deaths. Pre-eclampsia, for example, can increase the risk of low birthweight, asphyxia, stillbirth, and newborn death. Prompt detection and appropriate management can help lower this risk. In the case of preterm rupture of membranes, drugs are available to reduce the risk of infection and promote development of the baby's lungs, improving a preterm baby's chance of survival. Similarly, treatment for prolonged (more than 18 hours) rupture of membranes can reduce the incidence of newborn infection.

Promote Birth Preparedness and Complication Readiness

Newborn health and survival can be improved if delays in receiving care are reduced. Because common delays, such as failure to recognize signs of complications, cost considerations, and lack of transportaion, can be reduced through advance preparation and rapid action, the MNH Program promotes the concept of birth preparedness and complication readiness (BP/CR). Birth preparedness includes making arrangements for a normal birth, including identifying a skilled provider and/or healthcare facility for the birth, gathering supplies for a clean birth and immediate care of the baby, identifying a companion for support, and ensuring that funds are available to pay for maternal and newborn care. Complication readiness includes knowing key danger signs in the mother and baby, identifying an appropriate healthcare facility in case complications arise, and ensuring access to emergency transportation and funds.

Ensure Adequate Nutrition

Malnutrition during pregnancy can lead to low birthweight, mental retardation, and congenital anomalies. Supplements that provide extra calories can decrease low birthweight and perinatal death, and supplementation with iron can prevent maternal anemia, a cause of stillbirth, premature birth, and low birthweight (Ceesay et al. 1997). Neural tube defects can be prevented

MNH Program Recommendations:

Test for HIV and Provide Appropriate Care for HIV-Positive Women

All pregnant women should be offered testing for HIV. If a woman opts out of being tested, she should be offered testing at all subsequent ANC visits. Women who are HIV-negative or do not know their status should be encouraged to exclusively breastfeed. HIV-positive women who choose to breastfeed should breastfeed exclusively for 4 to 6 months and then abruptly wean. Proper breastfeeding technique and good breast health are critical. For HIV-positive women who choose replacement feeding, the acceptability, affordability, feasibility, and sustainability of replacement feeding—as well as the woman's ability to safely prepare it—should be ensured. To prevent MTCT, ARV prophylaxis should be provided according to national protocols, and invasive obstetric procedures should be limited to those that are absolutely essential.

Detect and Treat Pregnancy Complications

All pregnant women should have their blood pressure checked at each ANC visit. Women with high blood pressure should have their blood pressure monitored more closely and their urine checked for protein (an indicator of pre-eclampsia/eclampsia). Magnesium sulfate should be given to woman with severe pre-eclampsia to prevent convulsions, stroke, and other serious complications. Women with preterm or prolonged rupture of membranes should be given antibiotics to reduce the risk of infection. Women with preterm rupture of membranes should also be given steroids to promote development of the baby's lungs.

Promote Birth Preparedness and Complication Readiness

Every woman should have a birth plan that covers the elements of BP/CR for herself and her newborn. Providers should discuss with the woman how decisions will be made when labor begins or if danger signs arise during labor or the postpartum/newborn period. The woman's family, partner, or other key decision-makers in her life should be involved in the planning process.

Ensure Adequate Nutrition

Nutritional counseling as part of routine ANC should emphasize eating at least one extra serving of staple food per day during pregnancy and two extra servings per day while breastfeeding; eating a balanced diet; and eating a variety of foods rich in vitamins and minerals. In areas that have endemic deficiencies, appropriate supplementation with select vitamins and minerals—particularly vitamin A, iron and folate, and iodine—should be included as part of ANC visits.

with folate supplementation, and supplementation with vitamin A and/or iodine can reduce the risk of newborn infections and mental retardation.

Interventions at Birth

Ensure a Clean Birth Attended by a Skilled Provider

Only 58 percent of women in developing countries receive care from a skilled provider during childbirth (UNFPA 2003). To reduce newborn deaths and disabilities, every woman should receive care from a skilled provider at birth and should have timely access to emergency obstetric care.

Prevent and Treat Asphyxia

Asphyxia is the inadequate supply of oxygen before, during, or just after birth. An estimated 4 to 9 million newborn babies have asphyxia each year; 1.2 million die as a result and at least that many suffer serious long-term consequences, such as epilepsy and cerebral palsy (Save the Children 2001). A leading cause of asphyxia is prolonged or obstructed labor, which can be recognized and managed early with correct use of a partograph and appropriate interventions during labor. Prompt resuscitation can reduce the risk of death or serious complications. In most cases, resuscitation does not require highly technical interventions.

Ensure Warmth of Newborns

Providing a warm environment and dressing the baby appropriately are critical to preventing hypothermia and associated problems. Skin-to-skin contact is one of the most efficient and practical methods for keeping babies warm. For low birthweight babies, kangaroo mother care—early, continuous, and prolonged skin-to-skin contact—is ideal (WHO 2003). Not only does this provide warmth, but it also promotes bonding and allows the mother to continually assess her baby's condition and quickly recognize and respond to problems. The position of the baby, in an upright "frog" position between the mother's breasts, also promotes breastfeeding.

Ensure Early Contact with Mother and Exclusive Breastfeeding

Early contact after birth is associated with more affectionate behavior of mothers toward their babies. Mothers who begin breastfeeding early have fewer problems with breastfeeding (WHO 1998) and are likely to breastfeed more often (Van Den Bosch and Bullough 1990). Early breastfeeding also reduces the baby's risk of low blood sugar, which can cause convulsions or death.

MNH Program Recommendations:

Ensure a Clean Birth Attended by a Skilled Provider
All women should give birth in the presence of a skilled provider, and all births should occur in a clean environment. The provider's hands should be clean and a clean blade and tie/clamp should be used on the umbilical cord.

Prevent and Treat Asphyxia
The partograph should be used correctly and consistently during every labor to allow early detection of and intervention for fetal distress. Babies who do not breathe spontaneously at birth should be resuscitated using a self-inflating bag and mask.

Ensure Warmth of Newborns
Babies should be dried immediately after birth and placed in skin-to-skin contact with their mothers. Babies should be warmly dressed, with a hat covering their heads, and kept in a warm environment free from drafts. Bathing should be delayed for at least 6 hours and preferably 24 hours in order to avoid hypothermia. Kangaroo mother care is the preferred method for maintaining the body temperature of low birthweight babies.

Ensure Early Contact with Mother and Exclusive Breastfeeding
Newborn babies should be placed on their mother's chest immediately after birth and breastfed as soon as they shows signs that they are ready to suckle, usually within 1 hour after birth. Babies should be exclusively breastfed on demand, day and night, for the first 6 months of life.

Provide Immunizations and Eye Prophylaxis
Babies should be immunized at birth against tuberculosis (where prevalence is high), poliomyelitis, and hepatitis B. Within 1 hour of birth, silver nitrate, polyvidone iodine solution, or tetracycline ointment should be applied to the baby's eyes.

Breastmilk contains all the nutrients a baby needs for the first 6 months of life and changes over time to meet the baby's changing nutritional needs. Colostrum boosts the baby's immune system, protecting the baby from diarrhea and infections. Exclusive breastfeeding is also 98 percent effective as a method of family planning and can help women increase the interval between births (Rutstein 2000).

Provide Immunizations and Eye Prophylaxis

Immunization against tuberculosis, polio, and hepatitis can improve newborn health. Nearly one-fourth of the babies born each year do not receive immunizations, and 1.7 million children die each year from diseases that are preventable by immunization (GAVI 2000; UNICEF 2002).

Purulent conjunctivitis is characterized by the discharge of pus from the eyes. In countries where sexually transmitted infections are prevalent, the most frequent cause of purulent conjunctivitis is clamydia. More dangerous is gonococcal conjunctivitis; left untreated, about 3 percent of babies with gonococcal conjunctivitis will go blind and 20 percent will have corneal damage. Routine eye prophylaxis (applying an antiseptic or antibiotic) after birth can considerably reduce the risk of conjunctivitis in the newborn (WHO 2001).

MNH Program Recommendations:

Prevent Infections

The baby's umbilical cord should be kept clean and dry until it separates. The mother should regularly and thoroughly wash her hands after performing any task that could potentially contaminate her hands, such as changing the baby's diaper. Water used to prepare the breast-milk substitute for babies who cannot be breastfed should be boiled for 20 minutes before mixing.

Identify and Respond to Life-Threatening Complications

Women and other family members should be counseled to observe newborns closely after birth and for the next several days, to recognize signs of possible complications, and to seek care immediately. If danger signs are identified, providers should immediately assess the newborn to determine the degree of illness, the need for emergency care/stabilization, and the immediate course of action to take.

For more information about the MNH Program, visit our website: www.mnh.jhpiego.org

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Interventions after Birth

Prevent Infections

Although the majority of newborn infections result from maternal infections that are transmitted to the baby during pregnancy or birth, newborns can also become infected as a result of poor hygiene. After birth, the umbilicus provides a prime entryway for bacteria. Keeping the umbilicus clean and dry can reduce the risk of problems such as bacterial infections or tetanus, and proper hygiene and safe preparation of breast-milk substitutes (for babies who cannot be breastfed) can prevent diarrheal disease in the newborn.

Identify and Respond to Life-Threatening Complications

Women and providers should observe newborns after birth and know how to recognize signs of life-threatening complications that need immediate attention and referral to a higher level of care. Signs of sepsis (infection) during the first week of life include poor feeding, hypothermia, lethargy, floppiness, and vomiting. Other danger signs include abnormal body temperature, jaundice, diarrhea, abdominal distention, bleeding, pus or lesions on the skin, pus or redness of the eyes, and swollen limbs or joints.

Conclusion

The MNH Program promotes interventions before, during, and after pregnancy and birth that are proven to improve the health and survival of newborn babies. A major focus of the Program is to ensure that individuals who care for women and their babies are competent and trained using guidelines based on the latest available evidence.

The MNH Program also works with women, families, providers, and communities to improve BP/CR and to ensure access to high-quality emergency care services. BP/CR is the centerpiece of the Program's community and social mobilization activities, which aim to bring community stakeholders together to share in the responsibility for timely access to quality care for women and newborns. The Program's performance and quality improvement approach involves these stakeholders in strengthening clinical service delivery. Finally, by linking community-based providers, such as traditional birth attendants, to healthcare facilities, the Program also works to make facilities more responsive to women's and newborns' needs and encourage women to seek skilled care.

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